R E M A R K S

Submitted herewith is a Declaration under 37 C.F.R. §1.132 (the second Parson Declaration) by Nicholas Charles Parson, an applicant herein, incorporating by reference his previous Declaration under §1.132 (the first Parson Declaration) which was filed in applicant's parent application No. 09/142,301 (now U.S. patent No. 6,375,767), and setting forth additional information. A copy of the first Parson Declaration is attached as EXHIBIT 1 to the second Parson Declaration. This submission is made in response to the statement in the March 25, 2005, Office Action (p. 4) that "there is no 132 declaration being filed in instant application."

Also submitted herewith is an Information Disclosure Statement with a complete English translation of the reference JP 61030684 which was applied in the rejection of the claims. It is noted that the March 25, 2005, Office Action refers only to the abstract of the Japanese reference.

The independent claims (9, 10, 13 and 14) have been amended to define the alloy composition as *consisting essentially* of the recited constituents in the specified ranges of percentages by weight. These amendments are presented in response to the statement in the March 25, 2005, Office Action (p. 4) that "the instant claims do not possess . . . 'consisting essentially of' transitional expression."

In addition, to clarify their recitals, the independent claims have been amended to set forth expressly that the method or step of producing a population of billets comprises "performing more than one cast of metal ***wherein each cast of metal converts*** a body of molten metal comprising virgin metal and recycled scrap ***into a plurality of billets.***" This recital is supported by the disclosure of the original specification at p. 2, lines 11-13.

Since the present Amendment does not increase either the total number of claims or the number of independent claims, no additional fee is necessary.

Claims 9 - 24 are in the application. Of these, claims 9 (independent; amended), 13 (independent; amended), 17 - 18 (dependent on 9) and 21 - 22 (dependent on 13) are directed to a method of producing a population of aluminum alloy billets, while claims 10 (independent; amended), 11 - 12 (dependent on 10), 14 (independent; amended), 15 - 16 (dependent on 14), 19 - 20 (dependent on 10) and 23 - 24 (dependent on 14) are directed to a method of making an extruded section. All the claims have been finally rejected under 35 U.S.C. § 103(a) as unpatentable over JP 61030684 (JP '684) in view of U.S. patent No. 3,879,194 (Morris et al.), and also under 35 U.S.C. §102(b) as anticipated by or under §103(a) as unpatentable over GB 1484595 (GB '595).

Preliminarily, it is noted that the same grounds of rejection were asserted against the claims in the last Office Action, dated July 14, 2004. Applicants' arguments in response thereto, set forth in the Amendment filed January 3, 2005, were dismissed in the March 25, 2005, Office Action as "immaterial," in part because the first Parson Declaration (cited in that Amendment) was not filed in the instant application, and the claims did not contain the "consisting essentially of" composition limitation. In view of the second Parson Declaration submitted herewith, incorporating by reference the first Parson Declaration, and the amendments herein made to the claims, reconsideration of the Remarks of applicants' January 3, 2005, Amendment (incorporated herein by this reference) is respectfully requested. The novelty and patentable distinction of the claimed invention are discussed further below.

1. The method invention defined in the claims is novel, not anticipated by GB '595

The novel and distinguishing feature of applicants' claimed methods of producing a population of aluminum alloy billets and making an extruded section is the *method* feature of controlling Cu content so closely that every billet in a population produced by performing more than one cast of metal (wherein each cast of metal

converts a body of molten metal comprising virgin metal and recycled scrap into a plurality of billets) contains less than 0.015 (or, in claims 13 - 16 and 21 - 24, less than 0.010) wt.% Cu.

The combination of this feature with the other steps and conditions of the claimed methods is novel, notwithstanding the rejection of the claims as anticipated by GB '595.

GB '595, in the cited passage at p. 4, lines 8-14, merely states that Cu, Mn, Zn, Cr, Ti "and the impurities are mixed in refining and other processes and it is desirable that the amounts of then [*sic*] mixed are as small as possible, preferably less than 0.05% by weight," while EXAMPLE I (also cited by the Examiner) only mentions unspecified and unquantified "other impurities." The upper limit of Cu in applicants' broadest claims, <0.015 wt %, is less than one-third the GB '595 upper limit of 0.05 wt %; the lower limit of Cu in the claims is not zero but some small amount in excess of zero (see the first Parson Declaration, p. 5: "Cu will inevitably be present in the billets" cast from a molten body of virgin metal and recycled scrap, to which all the claims are limited). Thus, the range of Cu described in GB '595 overlaps or encompasses the range of Cu recited in the present claims.

It is settled that an overlapping or encompassing range in the prior art is not *anticipatory*, i.e., does not negate novelty, though it may raise an issue of *prima facie* obviousness. See *In re Peterson*, 65 U.S.P.Q.2d 1379, 1382 (Fed. Cir. 2003).

2. No combination of Morris et al. with JP '684 would meet the claim recitals respecting Cu content

By a parity of reasoning, the asserted combination of Morris et al. with JP '684 would not in itself meet the copper range of applicants' claimed method. JP '684 (see the attached complete English language translation) is entirely silent with respect to Cu content of the alloys treated, apart from identifying them as "6063S-T5 extrusions." Morris et al. states (col. 1, lines 9-15)

that the specification of AA6063 alloy "permits the presence of Cu, Cr, Zn and Ti up to level of 0.1%" and then sets forth (col. 2, lines 59-62) that in the alloys of the patent "Preferably . . . the contents of Cu and Zn . . . [are each] held below 0.03%." The Morris et al. value of 0.03%, again, is twice the upper limiting value recited in the present claims; hence, any combination of JP '684 with Morris et al. would be characterized by a Cu range that at most overlaps or encompasses that of the claims.

In other words, even if Morris et al. were combined with JP '684 as the Examiner proposes, that combination would not in itself fully meet any of applicants' claims, because the disclosure of Cu content in Morris et al., and the silence of JP '684 respecting Cu, however combined, do not teach producing a population of aluminum alloy billets by performing more than one cast of metal (wherein each cast of metal converts a body of molten metal comprising virgin metal and recycled scrap into a plurality of billets) such that every billet of the population has a composition containing <0.015 or <0.010 wt % Cu. Provision of the recited Cu limit of the claims would require further modification of the proposed combination of Morris et al. with JP '684.

It may be noted that omissions of express mention of Cu in the references (as in JP '684 and in EXAMPLE 1 of GB '595) do not imply a total absence of Cu, because the Cu with which the present invention is concerned is not a deliberate addition but an amount inevitably present (first Parson Declaration, p. 5) in billets cast from a molten body of virgin metal and recycled scrap.

3. The method feature of producing a population of billets all having less than 0.015% Cu would not have been obvious from the references

The Examiner observes that it is within the ambit of the ordinarily skilled artisan to use recycled scrap with virgin metal for economic reasons (final Office Action, p. 5). Such use of scrap is, indeed, economically desirable, but

> "Unless steps are taken to control the composition of the metal produced, it is inevitable that Cu content of some members of a series of casts produced in the casting centre will contain more Cu than is acceptable in improved billets of the present invention,"

i.e., Cu in excess of the maximum claimed limit of <0.015 wt %(first Parson Declaration, p. 5). The steps to be taken include "adequate control of the scrap addition[,] . . . attention to the Cu content of the virgin metal and planning of alloy changes and furnace flushing" (*Ibid.*). To control the Cu level below 0.015%, preferably below 0.010%, in all of the metal from cast to cast, as the claims recite,

> "requires a previously unrecognised level of control over the use of recycled scrap, furnace flushing and planning of alloy changes. It also imposes extra restrictions on the production process which had not previously been considered due to increased production costs and the difficulties of running the casting centre which results in a higher rejection rate from billets not meeting the tight composition limits." (*Id.*, p. 4).

Thus, "producing a population of aluminum alloy billets . . . such that every billet in the population has" <0.015 wt % (or <0.010 wt %) Cu as the claims recite requires use of positive process steps and/or conditions to control the Cu content, involving increased production costs and difficulties of running the casting center, without which at least some members of the population would have Cu in excess of the claimed upper limit. This is apparent from a comparison of Figures 1 and 2 on pp. 3 and 5, respectively, of the first Parson Declaration. The question of patentability under 35 U.S.C. §103(a) may therefore be stated as whether, from JP '684 in view of Morris et al. and/or from GB '595, it would have been obvious to modify their combined or several

teachings by not only producing a population of aluminum alloy billets by performing more than one cast of metal, wherein each cast of metal converts a body of molten metal comprising virgin metal and recycled scrap into a plurality of billets, but also including in the operation the positive steps and conditions, with their attendant added cost and inconvenience, necessary to achieve a Cu content uniformly below 0.015 or 0.010 wt % in all of the billets.

Applicants respectfully submit that the answer to this question is no. While GB '595 says that it is desirable that the amount of Cu, *inter alia*, be "as small as possible," the meaning of "as small as possible" is quantified by the immediately following statement, "preferably less than 0.05% by weight." There is nothing in this teaching to suggest that, at least below 0.05%, Cu content is a result-effective variable, or that still further reductions to a level less than one-third of the 0.05% value (i.e., to the upper limit of applicants' broadest claims) would afford any additional improvement or benefit. In other words, the "as small as possible" disclosure of GB '595, with the accompanying indication that this desired condition is satisfied by "less than 0.05%," would not have motivated a person of ordinary skill in the art to incur the added cost and difficulty of reducing the Cu content to less than a third of that value.

Likewise, Morris et al. is devoid of any suggestion that, at least at levels below 0.03% (two times applicants' claimed maximum), Cu content is a result-effective variable, or that further reducing Cu down to less than 0.015% (the upper limit of applicants' broadest claims) would provide any additional improvement. JP '684 is silent with respect to Cu presence, effects or limits. Hence, Morris et al. and JP '684, considered together, would not have motivated an artisan of ordinary skill to incur the added cost and difficulty of reducing the Cu content to half of the preferred value given by Morris et al.

The Examiner, regarding applicants' novel feature as a mere increase in purity (freedom from Cu), cites *In re Cofer*, 148

U.S.P.Q. 268 (C.C.P.A. 1966), for the proposition that changing the purity of an old product does not render the novel form patentable where the difference in purity "was inherent in or rendered obvious by the prior art." *Id.* at 271. With respect to the applicability of *Cofer* to the invention here claimed, however, two points are pertinent. In the first place, applicants are not claiming a *product* of improved purity, but instead are claiming *methods* of (or including) producing a product, wherein the limitations of the producing step to (i) producing a population of billets by performing more than one cast each of which converts a body of molten metal comprising virgin metal and recycled scrap (a source of Cu) into a plurality of billets and (ii) providing the body with a composition within a specification such that every billet of the population contains <0.015 wt % (or <0.010 wt %) Cu, in combination, require additional cost and difficulty. Even assuming *arguendo* that using a mixture of virgin metal and recycled scrap would be obvious, the question remains whether it would have been obvious from the prior art to incur the added expense and inconvenience necessary (as the first Parson Declaration sets forth) to reduce the Cu content of every billet to a value less than half the lowest preferred maximum mentioned in the references. This is not just a question of whether a product of increased purity would in itself be obvious from the art, but whether it would be obvious, starting with a particular type of molten body, to incur the additional cost and inconvenience necessary to achieve a level of freedom from Cu far more stringent than anything indicated as "preferable" in the art.

Secondly, as explained above, the attainment of an upper limit of Cu which, in every billet of a population produced in the defined way, is less than half the lowest upper limit specified in the prior art, is neither inherent in nor obvious from the art, because the references do not teach any method inherently providing that degree of freedom from Cu and contain no teaching that would have motivated a person of ordinary skill in the art to undertake the added expense and difficulty necessary to achieve it.

4. The claimed method provides an unexpected beneficial new result

Even if it were to be considered that the claimed method, including the recited limitation of the billet-producing procedure to the novel feature of a Cu content of <0.015 wt % in every billet of a population produced in the recited way from virgin metal and recycled scrap, is *prima facie* obvious from the applied references, nevertheless applicants submit that the provision of that feature achieves an unexpected beneficial result overcoming any such *prima facie* obviousness. This result is the achievement of desirably high and uniform "matteness" of surfaces of anodized extrusions made from the billets so produced.

The second Parson Declaration explains that approximately 20% of aluminum extrusions are given an anodizing treatment (with successive etching and anodizing steps) to produce a durable decorative coating (second Parson Declaration, p. 2).

> "For high quality applications . . . a uniform matte finish is considered more pleasing to the eye and is desirable for both clear and colored finishes. The underlying metal surface produced in the etch step is primarily responsible for this aspect of the product." (*Id.*, p. 3).

Heretofore, however, in the case of extrusion billets cast from melts containing recycled scrap and virgin metal, "Extrusions made from such metal showed an unexplained variation in matteness from batch to batch after etching and anodising" (first Parson Declaration, pp. 2-3).

The claimed invention overcomes this problem. As the first Parson Declaration further sets forth (p. 4), "The present invention arose from the realisation that such undesirable variation in matteness could be avoided by controlling the Cu level

below 0.015%, preferably below 0.010%, in ***all*** of the metal from cast to cast with the low Cu level." The Declaration describes comparative tests wherein

> "The inventive alloy with the controlled copper content was extruded alongside an alloy with a copper content greater than 0.015 wt %. The extrusions were etched and anodised in the T4 and T5 tempers and the gloss was measured before and after anodising. Figure 3 [of the first Parson Declaration] summarises the results, where in all cases the alloy with the controlled copper content gave a matter [i.e., more matte] finish both by eye and by gloss measurements" (*Id.*, pp. 4-5).

Clearly, the reliable and consistent production of extrusion billets uniformly containing less than 0.015 wt % Cu is a beneficial result, in affording reliably superior matteness of the surfaces of etched and anodized extruded products made from the billets. Equally, this is a result that would not have been expected from the applied references (JP '684, Morris et al. and GB '595), since none of these references teaches that Cu is a result-effective variable with respect to "matteness" of anodized surfaces of extrusions, or indeed intimates any relationship between Cu content and matteness of anodized surface.

It is further submitted that the unexpected beneficial result of the novel feature discussed above should be given weight in overcoming any *prima facie* obviousness, and that the recitals of that feature in the independent claims distinguish all the claims patentably over the applied references, however combined.

5. Commercial Success

The second Parson Declaration sets forth that the present invention has been attended with significant commercial success.

As stated therein (pp. 1-2), in the first Parson Declaration (at p. 6 thereof),

> "information concerning commercial success of the invention in 1998 and 1999 is set forth. Since then, the commercial success has continued. Production of the product of the claimed method by the assignee's affiliates reached a total of 16220 tonnes (MT) in 2003 and 22387 tonnes (MT) in 2004, a greater than twenty-fold increase over the 1998/1999 shipments. However, the premium mentioned at page 6 of [the first Parson Declaration] is no longer charged."

The second Parson Declaration goes on to explain the nexus between this commercial success and the novel and distinguishing features of the invention:

> "The use of the claimed method permits the producer of the product to fill a customer order for billet with material having uniformly controlled low copper levels in all billets within consecutive lots. This means that the customer has greater certainty that all extrusions produced from a billet shipment will anodize to the same high quality level as previous and subsequent lots and therefore reduces possible scrapped extrusions. The low copper also reduces the amount of metal removed during anodizing, creating less waste to treat" (*Id.*, p. 2).

> "The inventive alloy, and the controlled level of copper impurity, ensures that the etched surface has an optimized 'topography' giving maximum scattering of incident light to give a so-called 'matte or low gloss' finish desirable to the end user. This aspect of the product is not simply subjective but can be measured by a reflectivity or gloss meter, many models of which are

commercially available. Of particular concern to the customer is the batch to batch consistency of the finish. For example, many large architectural projects utilize large quantities of extrusions that are inevitably produced from multiple cast lots and extruded lots. When all the product is visible to the naked eye the consistency of the finish is critical and the invention minimizes such variations. Even when various batches are not present side by side in the end application, many end users still require consistent part to part quality over time, for example in the automotive sector" (*Id.* at p. 3).

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For the foregoing reasons, it is believed that this application is now in condition for allowance. Favorable action thereon is accordingly courteously requested.

Respectfully,

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I hereby certify that this paper is being deposited this date with the U.S. Postal Service as first class mail addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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